SUMMARY OF PUBLIC HEARING

WUSKWATIM

GENERATION AND TRANSMISSION PROJECTS

OCTOBER, 2004

MANITOBA
CLEAN ENVIRONMENT
COMMISSION

105-00627/

Foreword

In September 2004, the Manitoba Clean Environment Commission submitted its *Report on Public Hearings: Wuskwatim Generation and Transmission Projects* to the Manitoba government. These projects represent the first hydroelectric development proposed in Manitoba since the early 1990s. The Generation Project is the first hydroelectric development in Manitoba structured as a partnership of a Crown corporation and a First Nation. The Wuskwatim projects were also the first hydroelectric development to be subjected to a public hearing under *The Environment Act* of Manitoba and the first subject to a cooperative environmental assessment under the Canada-Manitoba Agreement on Environmental Assessment Cooperation.

In recognition of the significance of the projects and the issues that surround them, the Commission has published this summary of its full report. This summary is intended to further public understanding and debate. It describes the Projects, summarizes issues raised during the hearings, outlines the Commission's main findings and includes all of the recommendations that were contained in the full report.

The full report can be viewed online and downloaded from the Commission's website: www.cecmanitoba.ca. Copies of the report can also be obtained from the Commission office: 305-155 Carlton Street, Winnipeg, MB, R3C 3H8.

All maps and charts in this report were provided by Manitoba Hydro and the Nisichawayasihk Cree Nation, the proponents of the projects.

Summary of the Clean Environment Commission Report on the Wuskwatim Generation and Transmission Projects

The Manitoba Hydro-Electric Board (MH) and the Nisichawayasihk Cree Nation (NCN) have jointly proposed the Wuskwatim Generation and Transmission Projects. The Wuskwatim Generation Project (the Generation Project) calls for a 200-megawatt (MW) hydroelectric plant on the Burntwood River near Wuskwatim Lake, approximately 45 km southwest of Thompson and 35 km southeast of Nelson House. The Wuskwatim Transmission Project (the Transmission Project) consists of three transmission-line segments to transmit the electricity generated by the Generation Project into the existing MH system.

In April 2003, Manitoba's Minister of Conservation mandated the Manitoba Clean Environment Commission, an arms-length provincial agency established under the authority of *The Environment Act*, to conduct a public hearing to consider:

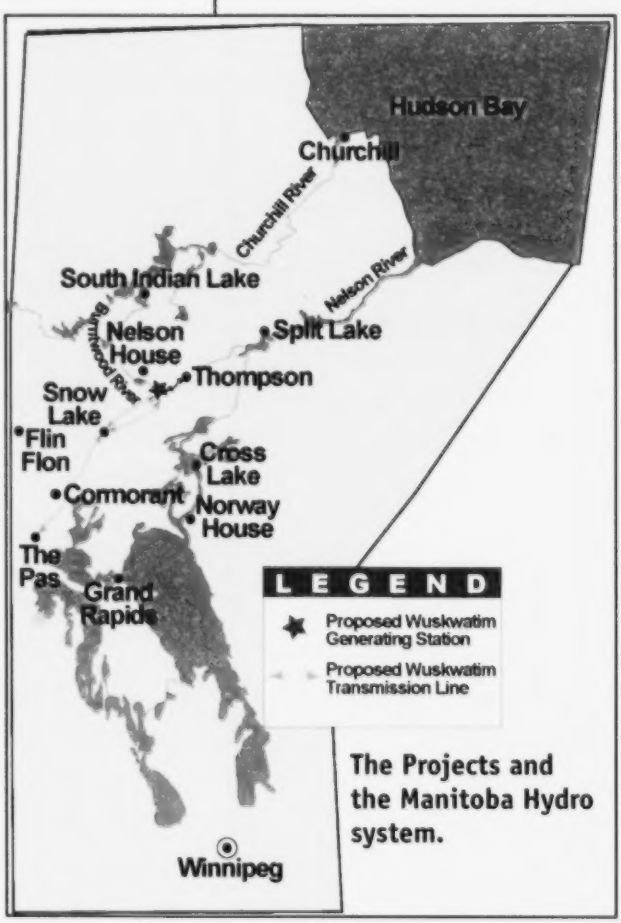
1. The justification, need for and alternatives to the proposed Wuskwatim Generation and Transmission Projects, and
2. The potential environmental, socio-economic and cultural effects of the construction and operation of the Projects.

The first issue, which is referred to in this document as the Needs For and Alternatives To (NFAAT) issue, touches on issues that are often seen to be in the purview of the Manitoba Public Utilities Board (PUB) rather than the Clean Environment Commission (hereafter, the Commission). The second issue, the potential environmental, socio-economic and cultural effects, is much more clearly within the Commission's traditional mandate to advise the Government of Manitoba on sustainable development, environmental issues and licensing matters. In order to accommodate this broadened mandate, two members of the PUB were appointed to the Commission and the panel that conducted these hearings.

The panel assigned to conduct the public hearing on the Projects consisted of Mr. Gerard Lecuyer (Chairperson), Dr. Kathi Avery Kinew, Mr. Harvey Nepinak, Mr. Robert Mayer, and Mr. Terry Sargeant.

From March to June 2002, the Commission conducted 32 days of hearings in Winnipeg, Thompson and The Pas (Opaskwayak Cree Nation (OCN)). MH and NCN, funded and non-funded Participants (described below), government regulators, First Nation representatives and members, other Aboriginal organizations, and the general public made presentations to and were questioned by the Commission.

This Commission used two different terms to describe members of the public who participated in the hearing process: Participants and Presenters. Participants were organizations and their representatives who were involved in both the Pre-Hearing Processes and the formal hearing proceedings. Aside from making presentations at the hearing, many Participants retained experts to make submissions, and participated in the questioning of those who made presentations. Presenters were organizations and members of the public who attended and spoke only during the formal hearing proceedings. To allow them to properly participate in the hearings, 11 different Participants received a total of $876,438 through the Commission's Participant Assistance Program.



The Projects and the Manitoba Hydro system.

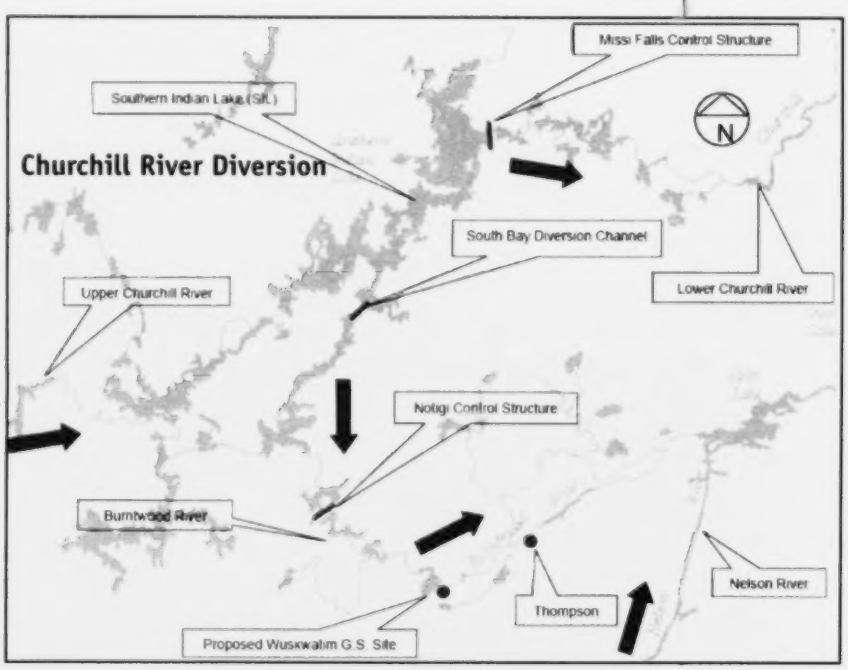
The construction and operation of the proposed Projects will require a variety of licences from both the Government of Canada and the Government of Manitoba. Both Projects require licensing under *The Environment Act* of Manitoba, while the Generation Project requires an interim licence under *The Water Power Act* for construction of the Generation Project. The Transmission Project requires a provincial licence under *The Crown Lands Act*. The Generation Project also requires federal authorizations under the *Fisheries Act* for the harmful alteration, disruption and destruction of fish habitat and use of explosives near water and a

permit under the *Navigable Waters Protection Act*.

Upon receipt of the Commission's report, the Minister of Conservation will decide whether licences should be issued under *The Environment Act* for the Projects. Licensing decisions by Manitoba's Minister of Water Stewardship and Canada's Minister of Fisheries and Oceans will also take into account the report on consultations with potentially affected First Nations conducted by Manitoba and Canada under Section 35 of the *Constitution Act*.

The Context: Manitoba Hydro and Northern Manitoba

The development of the hydroelectric potential of the Nelson River in northern Manitoba commenced in the 1960s. MH brought the Long Spruce, Kettle, and Jenpeg generating stations into service on the Nelson River in the 1970s, with the Limestone station being constructed in the 1980s. These stations' ability to provide maximum power when demand is the highest is dependent upon the Churchill River Diversion (CRD), Lake Winnipeg Regulation (LWR), and the Augmented Flow Program (AFP). The CRD diverted a large portion of the flow of the Churchill River into the Nelson River system. This was accomplished by damming the Churchill River at Missi Falls on Southern Indian Lake, forcing much of the Churchill's flow down the Rat and Burntwood rivers into the Nelson River. A dam on the upper Nelson River regulates water levels in Lake Winnipeg. This allows MH to ensure that the flow down the Nelson River is maximized when demand for electricity from the generation stations is at its peak. Interim licences issued by the Manitoba government place limits on the allowed changes in flows down the waterways



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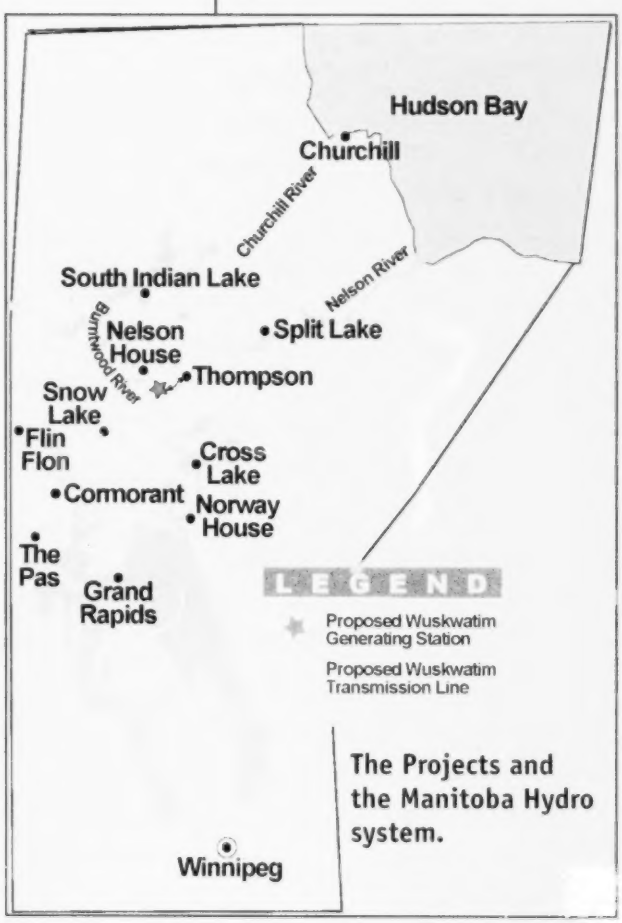

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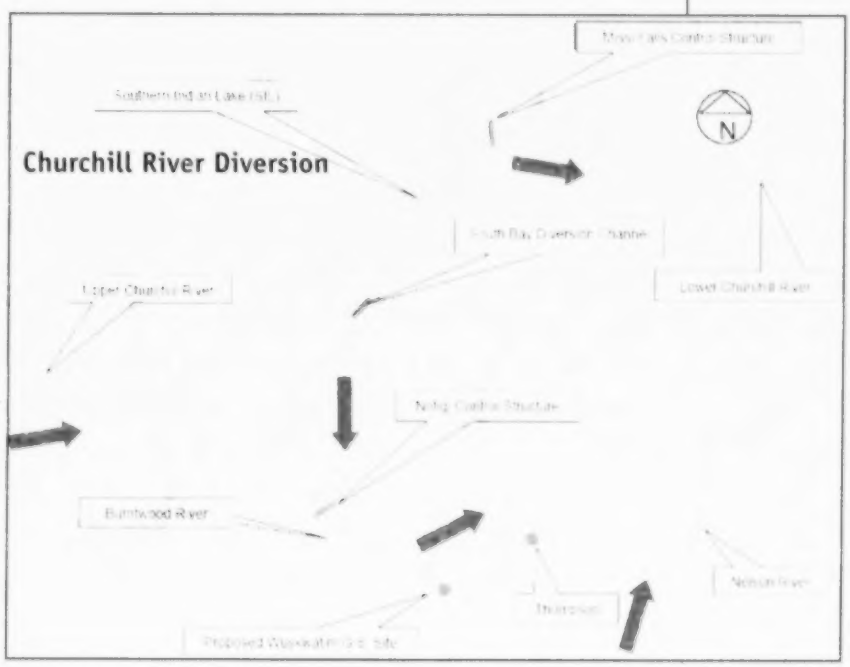
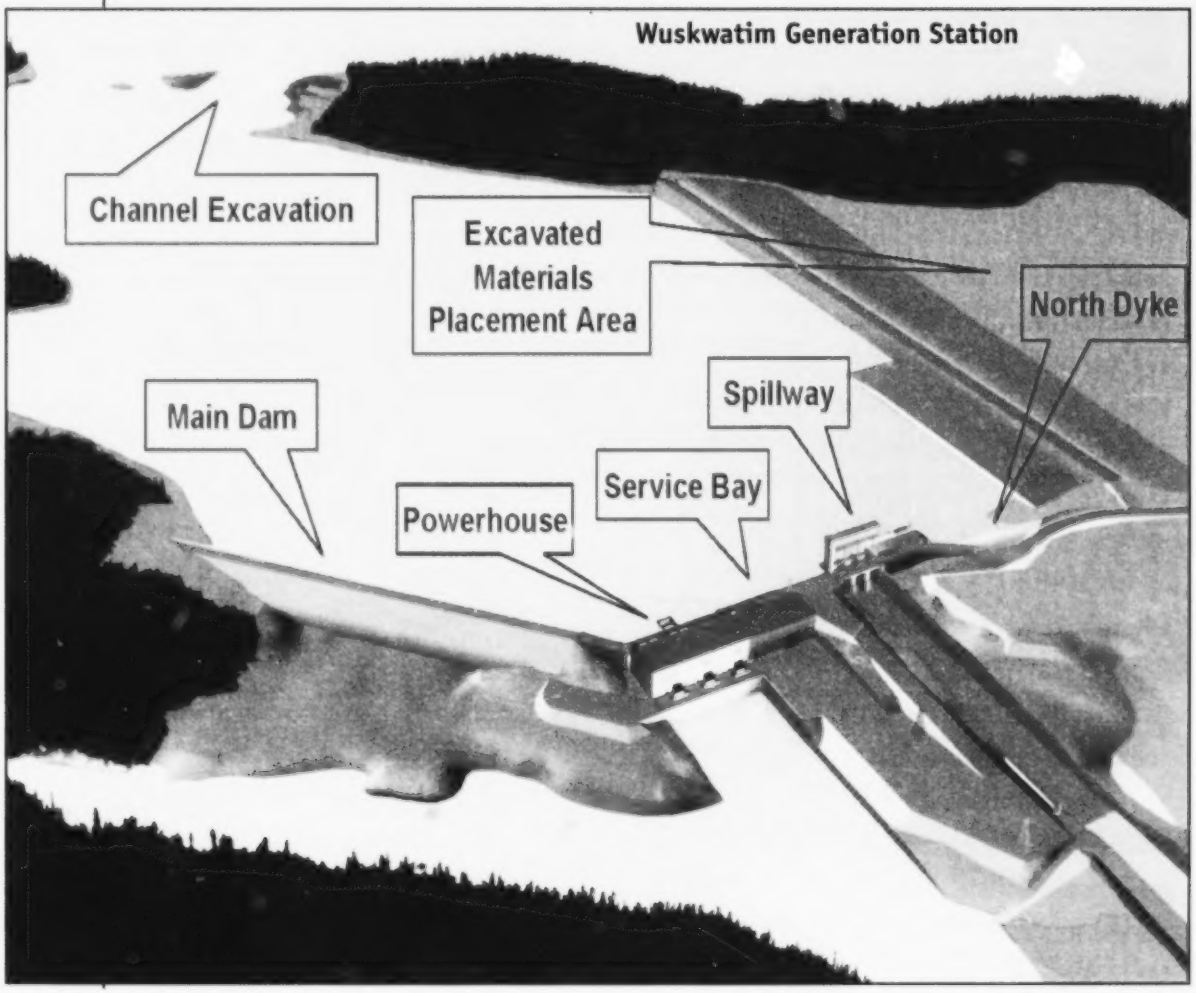


affected by the CRD and LWR. Under the AFP, the Manitoba government gives MH the authority to alter the limits of the CRD on a yearly basis.

The flooding and changes in water levels associated with these projects had serious long-term effect on local traditional Aboriginal communities and economies. In 1974, the five directly affected First Nations of Nelson House, Split Lake, York Landing, Cross Lake and Norway House formed the Northern Flood Committee (NFC). In 1977 the five NFC First Nations, Manitoba, MH and Canada signed the Northern Flood Agreement (NFA), which was intended to deal with adverse effects resulting and continuing to result from the modification of the water regime. In the mid-1990s, Northern Flood Agreement Implementation



Agreements were concluded between four of the NFA First Nations, MH, and Canada and Manitoba to implement the 1977 NFA and to resolve most, although not all, outstanding claims stemming from the CRD and LWR.

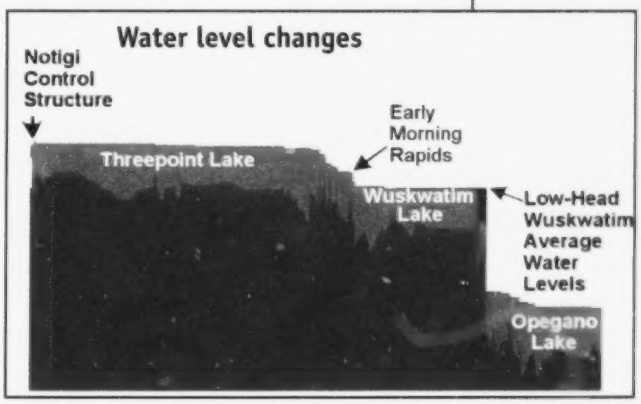
The Projects

The proposed Projects consist of a generating station and associated infrastructure at Taskinigup Falls on the Burntwood River in the Nelson House Resource Management Area (RMA) along with the construction of the associated transmission facilities. Taskinigup Falls are on the Burntwood River system, approximately 35 km south-east of Nelson House and 45 km south-west of Thompson. The falls are 1.5 km downstream from Wuskwatim Falls, which are at Wuskwatim Lake's immediate southern outlet.

The proposed in-service date for the Projects is 2010. Manitoba Hydro estimates that Manitoba consumers would need the electricity from the station in 2019. In the intervening years, its electricity would be sold on the export market.

The proposed dam would raise the water in the Burntwood between Taskinigup Falls and Wuskwatim Falls from approximately 227 m to approximately 234 m above sea level (asl), flooding approximately 37 hectares or 0.5 km^2 of land between Taskinigup Falls and Wuskwatim Falls. The water level of Wuskwatim Lake would be approximately 234 m asl, a level that is near the upper range of water levels experienced on Wuskwatim Lake since construction of the CRD. MH and NCN indicated that Wuskwatim Lake would be lowered by up to 1.0 m under abnormal or emergency circumstances.

The generation station would be operated on a modified run-of-the-river basis, with water entering Wuskwatim Lake daily being discharged over a twenty-four-hour period. Water levels upstream along the Burntwood River would be affected as far as Early Morning Rapids, a distance of 27 km. Downstream levels will be affected as far as Birch Tree Lake, a distance of 40 km, although much of the downstream variation will be removed by the dampening effect of Opegano Lake, 13 km downstream.



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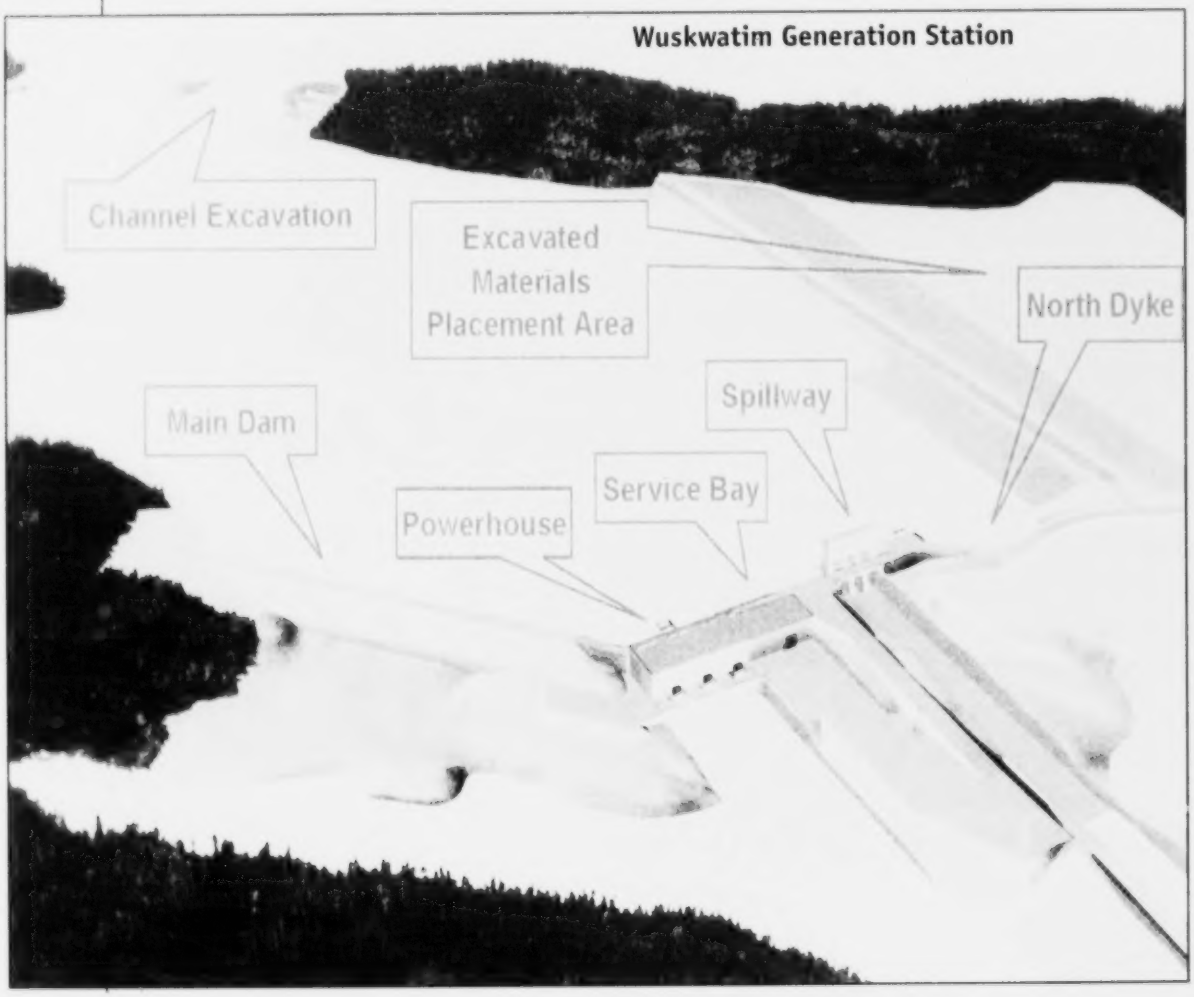

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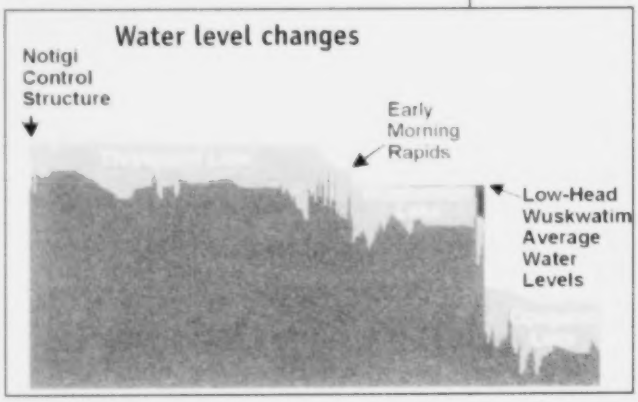
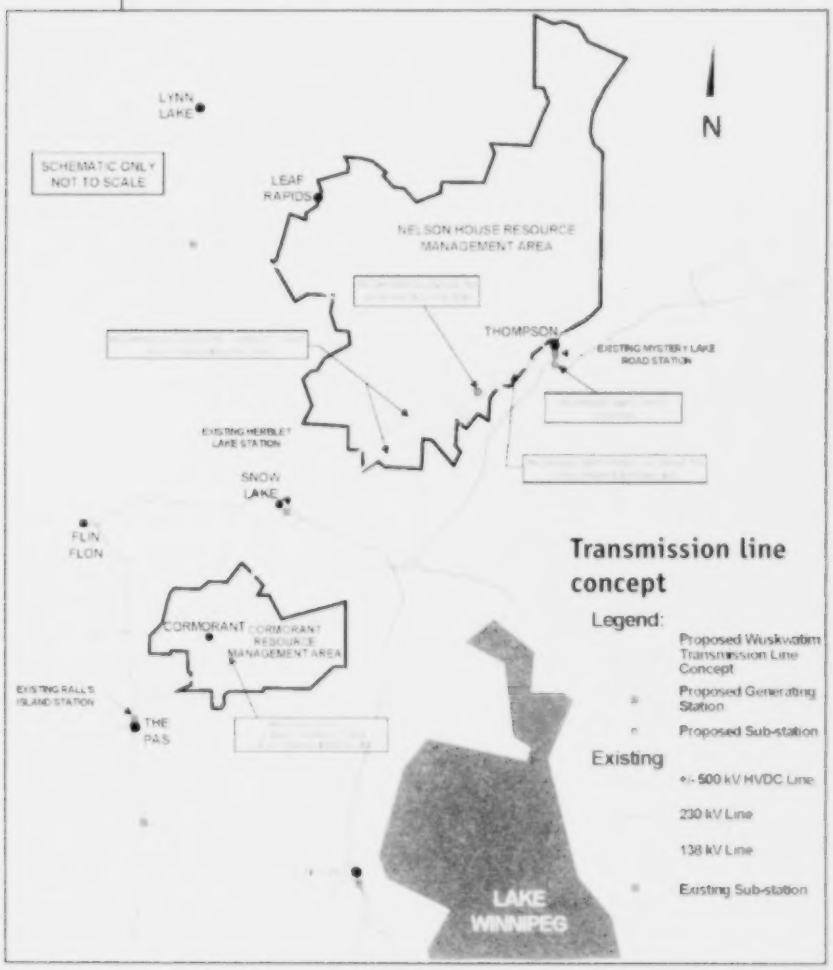


MH/NCN stated that construction of the Generation Project would not lead to changes in the operation of CRD. Accordingly, the Project would not have any effect on Southern Indian Lake. However, the Generation Project could result in a maximum increase in the level of Cross Lake of 0.36 ft and a maximum decrease of 0.26 ft. MH/NCN described these changes as minor compared with the average annual fluctuation of Cross Lake of about 4 ft since 1991.

The Generation Project's permanent facilities would include three fixed-blade turbine units located in a powerhouse complex, a spillway, and a main dam and dyke to develop the immediate forebay. Channel improvements would be made at the outlet from the lake to improve the outflow capability. A 48-km gravel-surfaced all-weather road beginning at Mile 17 on Provincial Road 391 would provide access to the Generation Project construction site.



The Generation Project would require a construction camp and associated infrastructure, contractor's work area, MH work area and on-site access area. An on-site construction camp would include a full-service 625-person mobile trailer camp with water-treatment and sewage lagoon. It would also include a recreation/training building, a gymnasium, a helicopter landing pad and recreation fields. The water-supply and treatment system, as well as the sewage collection, treatment and

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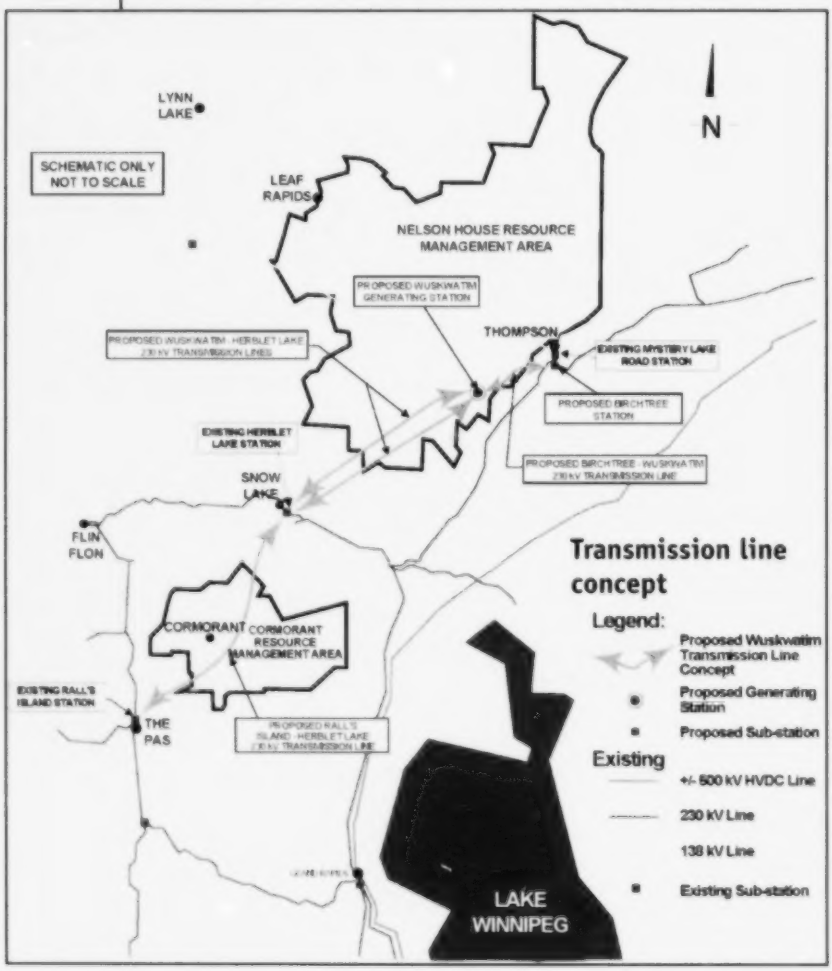

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disposal systems, would be designed and operated in accordance with provincial requirements.

The amount of land required for the construction, operation and maintenance of the Generation Project, excluding the land required for the permanent transmission line and associated facilities, is 147 ha with an approximate area of site disturbance of 487 ha.

Construction is projected to begin in 2005 for a 2010 in-service date. The projected annual construction workforce for the Generation Project would range from 145 to 540 workers. These numbers do not include the contractor's supervisory staff, MH staff, camp operation staff and transmission-line construction workers.

The proposed Transmission Project consists of:

- Three lines, each less than 1-km long, to connect the Wuskwatim generation station to the proposed Wuskwatim Switching Station.
- A 230-kV 45-km transmission line to connect the Wuskwatim Switching Station to the proposed Birchtree Station at Thompson.
- Two 230-kV transmission lines, each approximately 137-km long, to connect the Wuskwatim Switching Station and the existing Herblet Lake Station, north of Snow Lake.
- Advancement of construction of a 230 kV 165-km transmission line from the Herblet Lake station to the existing Rall's Island Station near The Pas from its current schedule.

The proposed 230-kV lines would, for the most part, traverse Government of Manitoba Crown land. On the approaches to the Birchtree, Herblet Lake and Rall's Island stations, the lines would cross land subject to local government jurisdiction.

The construction of the Transmission Project is proposed to take place over a six-year period.

Stations required for the Transmission Project include a 230-kV gas-insulated switching station to be constructed at the Generation Project site, and a new switching station (Birchtree Station) to be situated in the Local Government District of Mystery Lake, just south of the City of Thompson. Equipment additions at the existing Herblet and Rall's Island stations would be required to terminate the new lines. There is no decommissioning plan for the Transmission Project.

Business structure

In 2001 MH and NCN reached an agreement in principle (AIP) to develop the Generation Project through the creation of a limited liability partnership, with NCN owning a maximum of 33% and the balance owned by MH. The proposed partnership would be known as the Wuskwatim Power Partnership. MH will plan, design, engineer, construct and commission the Generation Project. The Transmission Project will be solely owned by MH. Under the proposed Management Agreement, MH will manage the business affairs of the Partnership, including the operation of the Generating Station, once completed.

MH and NCN are currently negotiating a project development agreement (PDA), but have indicated that the agreement will not differ significantly from a non-binding summary of understanding (SOU) reached between the parties in 2003. Before it comes into effect the PDA will have to be approved by both MH and by a vote of NCN members.

The costs of the Wuskwatim Projects (both Generation and Transmission) will be comprised of capital and production costs. The $900-million capital-cost estimate includes labour, materials, capital taxes, contributions to a transmission development fund and estimates for environmental mitigation and compensation costs. Each limited partner will be responsible for its pro rata share of the capital costs of the Generation Project. The production costs (between $8.6 and $9.2 million depending on export prices) include all costs related to the operation of the Projects once completed.

Power from the Generation Project will be sold to MH at prices based on the actual export prices received by MH. Although it is estimated that the Generation Project power will not be needed for domestic purposes until approximately 2019, the purchase price of power will remain at the export prices indefinitely. Net income for the Partnership will commence in 2010. Under MH's low-export price scenario, Partnership net income is projected rise from $5-million to $77-million by 2035. Under its high-export-price scenario, it is projected to rise from $25-million to $170-million by 2035.

An Adverse Effects and Compensation Agreement between the Partnership and NCN will recognize the efforts of MH and NCN to avoid adverse effects of the Generation Project and make provision for adverse effects that cannot be mitigated.

The Partners have committed up to $5-million of the Generation Project funds for pre-project training for NCN and other northern Aboriginal people. In addition, funds will also be received from the federal and provincial governments. Seventy-five percent of these funds will be allocated to NCN for pre-project training of band members and residents of the Nelson House Northern Affairs Community. Twenty-five percent will be available for pre-project training of other northern Aboriginal people.

While NCN members will be given preference regarding construction employment and business opportunities, no person is guaranteed a job. The construction will take place under the Burntwood-Nelson collective agreement (BNA). In addition to MH stating that every effort will be made to provide employment opportunities to NCN members, preference will be given to northern Aboriginal persons who are union members, followed by northern Aboriginal persons with the necessary skills. Union members from southern Manitoba will not be employed ahead of non-union members from northern Manitoba who have the necessary skills.

MH committed itself to establishing a Transmission Development Fund of approximately $7.8-million to provide annual benefits to Aboriginal communities that pursue traditional land-use activities on Crown lands newly reserved by MH for the development of major transmission facilities.

Justification, needs for and alternatives to

The Commission was asked to examine the justification, needs for and alternatives to the proposed Projects. This includes assessing the rationale for advancing the Wuskwatim in-service date of 2019 to 2010, the potential impact on MH's finances, the impact for ratepayers, and the availability of alternative sources of power to meet identified needs. Key issues to be addressed were the security of export markets, predicted export prices, and the impacts on MH's debt load, and domestic rates. In addition, it was necessary to compare the projects to alternative energy sources.

MH took the position that advancement of the Projects from an in-service date of 2019 to 2010 results in reduced operating costs because of decreased use of non-hydro resources and imports. As well, surplus energy would be sold on the export market until domestic load grows beyond existing resources. A large

export market for MH's surplus electricity exists in the Mid-Continent Area Power Pool (MAPP) and Midwest Independent System Operator (MISO) areas. MH expects demand in the MAPP area to grow by 2,100 MW by 2010 and by 9,600 MW in the next 20 years. MH concluded that the Projects would be economically viable under both the low- and high-export-price scenarios.

According to MH/NCN, the internal rate of return (IRR) for the Projects under the expected export price is 10.3%. Under the low- and high- export price scenarios it is 8.5% and 12.3% respectively. (The IRR is the annual economic return on total investment expected from a project, excluding inflation.)

MH's current debt-to-equity-ratio target is to achieve 75% debt and 25% equity by 2011/12. MH/NCN indicated that the Projects would have a minor effect on MH's achievement of a 75% debt-ratio target. Under the low-export-price scenario, the achievement of the debt-to-equity ratio will be delayed by two years. There would be no effect under the high-export-price scenario.

MH/NCN stated that if the Projects' construction was advance approximately 10 years, domestic electricity rates could be 4% to 8% lower. The advancement of the Projects could yield a cumulative reduction in customers' electricity bills by $87- to $216-million by 2035, depending on export-prices.

MH assesses resource options on the basis of both their cost and their environmental impacts. Using these indicators, MH has identified coal, other combustion turbines (CT), hydroelectric projects, demand-side management (DSM), supply-side enhancement (SSE), and wind power as potential alternative sources of electricity.

Coal: MH stated it does not currently find new coal generation attractive because of significantly higher capital costs relative to combustion turbines, and future regulatory uncertainty, due to ecological concerns.

Hydroelectricity: Of 16 potential generation stations sites identified by MH, the Projects, Gull/Keeyask, Conawapa, and Notigi are the most attractive options. Of these, the Wuskwatim Projects have the best internal rate of return and, thus, are the most economical, at this time.

Combustion turbine: MH stated that because CTs depend on natural gas, they have higher costs and greater economic risks than the Projects.

Demand-side management: MH's DSM initiatives, including energy efficiency, conservation initiatives and load-management programs, enable MH to serve

more domestic customers with less energy. MH committed itself to pursuing all DSM initiatives in parallel with the Projects.

Supply-side enhancement: SSE projects modify or replace existing equipment to enhance facility performance or to augment system operation. MH has indicated that it will pursue all economically feasible SSEs in parallel with the Projects.

Wind: MH stated that it is pursuing the development of 250 MW of wind power. It also noted that while wind provides electrical energy with very low lifecycle environmental impacts, it is not a firm resource.

During the hearing, Participants raised concerns about the pricing agreement, adequacy of risk analysis, the need for PUB oversight, the availability of export markets, the need to undertake an economic analysis of the projects from a corporate as opposed to a project perspective, the effectiveness of MH's current DSM programs, and the accuracy of MH's forecast of the future demand for electricity. It was argued that MH/NCN had not presented the Commission with a full set of portfolios of alternative development alternatives, making it difficult to fully assess the alternatives to the Projects.

Many Presenters praised the partnership as a new model for northern development, while others raised concerns about what were seen as unfulfilled promises from previous development arrangements. And while many spoke of the economic benefits, particularly increased employment that the Projects would bring to the North, others identified the social pressures that would accompany such an increased level of activity.

Commission Comments and Observations on NFAAT

The Commission respects the negotiations that have taken place between MH and NCN and accepts that this type of partnership will be beneficial to both parties. However, the Commission has concerns regarding the agreement that power will be purchased from the Partnership at export prices indefinitely. Over the long-term MH may not be able to recover the export revenue equal to or greater than the price paid for the power.

The Commission would have preferred to have seen a review of the business risks associated with the Partnership. Risk analysis will be of increasing importance for future MH projects that are considerably larger and could have a

greater impact on the financial stability of MH.

The Commission recognizes the economic opportunities created for NCN members and other First Nations and urges MH to ensure proper training opportunities are realized. It will be imperative that MH and its contractors fully implement life-skills training, onsite counselling, and other programs that assist members of Aboriginal communities to become effective members of the MH workforce.

Overall, the Commission concludes that MH/NCN have performed appropriate due diligence with respect to capital- and production-cost estimates. However, since significant risks may exist with respect to a number of cost components, such as the costs of delay, generation-station construction costs, mitigation and compensation costs, and water-rental rates, the PUB should monitor the costs and benefits of the Projects on an ongoing basis.

The Commission accepts MH/NCN's analysis that small increases to MH's debt-to-equity ratio will likely have negligible impact on MH's financial stability and will not require any offsetting increase to domestic electricity rates during the start-up of the Projects. However, the Commission is of the view that the benefits to MH and its ratepayers will likely be positive, but smaller than suggested by MH/NCN. The Commission's support for the Projects is contingent on MH being able to maintain its commitment that domestic ratepayers will not experience rate increases as a result of the Projects.

The Commission is satisfied that the low- and high-export-price scenarios represent reasonable bounds for forecasted export prices. The Commission believes that Wuskwatim's IRR is likely lower than that presented by MH/NCN, but it is likely to be within an acceptable range. Finally, for future hydroelectric projects, the Commission would like to see the analysis performed from MH's stand-alone corporate perspective as well as the proposed partnership perspective.

The Commission believes that a portfolio analysis approach would have been more helpful and recommends that this approach be used for future projects. The portfolios should include consideration of hydroelectric sequencing, as well as implementation of other initiatives such as DSM programs and SSE projects.

The Commission is satisfied that the Projects should proceed prior to Conawapa, Gull/Keeyask and Notigi and notes that none of the Participants challenged the sequencing of hydroelectric generation.

The Commission also accepts that the Projects should proceed in conjunction with DSM initiatives. It furthermore accepts MH's representation that it can increase DSM targets by 1.5 to 2 times existing targets and implement all economic SSE, as well as develop the Projects, and further expects MH to increase the DSM targets to greater than 2 times the current levels. While the Commission recognizes the environmental benefits of wind power, it has concerns about the financial viability of wind power at the present time and also recognizes such development may have significantly higher risks than the Projects.

Since MH has been unable to develop any non-utility generation (NUG) arrangements (under which independent generators sell energy to MH) it should review its NUG policy and rate structure to ensure that all possible steps are being taken to promote economic and environmentally conscious non-utility generation.

The Commission notes that there is no need for the Projects to be constructed with an in-service date of 2010 when domestic demand for energy is considered alone. However, the Commission recognizes that MH's mandate allows it to pursue projects to increase export sales. MH/NCN have established that an export-market opportunity exists. With this consideration of MH's mandate, the Commission accepts that there is a need for the Projects.

The Commission has concluded that the Projects represent a viable economic alternative and an in-service date of 2010 should be pursued. This recommendation to proceed with the Projects is based upon MH's commitment to also maximize the benefits of both DSM and SSE as well as the Projects.

Environmental impacts

Methodology

MH/NCN submitted environmental-impact statements (EIS) for the Projects based on publicly reviewed guidelines. MH/NCN held that in preparing the EIS, appropriate attention had been paid to sustainable development, traditional scientific knowledge (TSK), Valued Environmental Components (VECs), baseline conditions, thresholds, uncertainty, determinations of significance, cumulative impact assessment, environmental protection plans, and the need for consultation. (TSK is scientific knowledge held by Aboriginal or indigenous

peoples around the world. It is based upon an intimate connection with the lands and waters, oral tradition, and draws upon the people's connectedness to the land.)

Some Participants and Presenters expressed concern about the adequacy of the application of the principles of sustainable development, TSK, VECs, thresholds, the determination of significance, cumulative-effects assessment, environmental effects, and consultation. Others said the process represented a giant step forward in the recognition of the value of traditional knowledge.

Commission Comments and Observations on methodology

The Commission concluded that the EIS documents, coupled with MH/NCN testimony, provided sufficient information to reach adequate conclusions about the Projects' potential impacts. However, there are a number of areas where the Commission believes the environmental-assessment process can be improved.

While the EIS documents did not reflect MH/NCN's commitment to the Government of Manitoba's principles of conservation, enhancement, rehabilitation and reclamation, these principles were addressed in answers to questions submitted during the pre-hearing interrogatory process.

Similarly, the Commission accepts that TSK contributed to decisions by MH/NCN for the identification, assessment and mitigation of environmental effects, although this use was not effectively communicated in the EIS documents. While the EIS Guidelines for both Projects pointed to the use of VECs (which can be any part of the environment considered important in the assessment process), environmental components such as fish habitat, social values and cultural values were not selected for the Generation Project and VECs were not used for the Transmission Project. This may have been partially compensated for by the use of both TSK and standard environmental assessment methods.

Apart from water-quality parameters and mercury levels in fish, the Commission observed that there appears to be very limited information in the EIS documents to demonstrate whether environmental effects of the Projects are below, at or above thresholds (these are limits or tolerance for a VEC that if exceeded will likely result in a measurable or demonstrable effect).

Because of the limitations in the quantitative environmental analysis in the EIS documents, the Commission is concerned that there is uncertainty about

potential costs of mitigation, remediation and compensation. The levels of uncertainty call for a vigourous application of the precautionary principle (which holds that whenever there is reasonable suspicion of harm, lack of scientific certainty should not be used as an excuse to preclude preventative action) to ensure that adverse effects are mitigated and residual effects are minimized.

The Commission observed that while the EIS documents generally reflect the requirements for significance evaluation, the EIS documents do not provide analysis and documentation in all cases to support conclusions of insignificance. The Commission also observed that effective use does not appear to have been made of existing thresholds provided by legislation, policy and scientific literature. In the absence of thresholds, the sort of mitigation, monitoring and reporting regime associated with the precautionary principle should be applied until thresholds are established for VECs.

The Commission concludes that while MH/NCN made a reasonable cumulative effects assessment according to Manitoba's current environmental assessment standards, there is substantial room for improvement in relation to national and international environmental assessment standards.

While the Commission recognizes that MH/NCN have committed to an ambitious environmental-monitoring program, it would like to see the scope of the environmental protection plans expanded to assess the adequacy of the environmental assessment, evaluate the effectiveness of mitigation measures, document baseline conditions and determine thresholds for VECs.

The Commission encourages Manitoba to take a lead role in the coordination of all monitoring requirements resulting from the Projects and not just those outlined in environmental protection plans. The Manitoba Department of Water Stewardship should be provided with the necessary staff and financial resources to support expanded water-related monitoring programs.

The Commission believes that MH/NCN have complied with the consultation requirements outlined in the Guidelines for the Projects. The Commission notes that there are outstanding issues that are not fully addressed in the EIS documents. The Commission encourages the parties to renew efforts to consult with the Community Association of South Indian Lake on the Generation Project and other related matters. The Commission is concerned that consultations between MH/NCN and the Métis Nation on the Projects have not been undertaken

to the satisfaction of the Manitoba Métis Federation (MMF). However, the Commission acknowledges that through discussions the Government of Manitoba, the MMF and MH are making progress towards resolving outstanding legal and policy issues. The Commission expects MH to consult on an ongoing basis with Mosakahiken Cree Nation (MCN) regarding the routing of the transmission lines between the Herblet Lake Station and Rall's Island Station.

Anticipated impacts

The overall MH/NCN position was that, because the Projects were designed to avoid and minimize adverse effects, it could be expected that the Projects would not result in significant adverse effects on the physical, biological or socio-economic environment. Those adverse effects that were anticipated in some areas were not considered to be significant and could be properly managed. Positive biophysical effects were predicted to result from displacement of greenhouse-gas emissions and by reduction in annual fluctuations in Wuskwatim Lake levels caused by the CRD. MH/NCN also predicted positive socio-economic effects during construction and operation for people in the local region as well as throughout Manitoba.

MH/NCN concluded that the Generation Project would have both positive and negative socio-economic effects, with the people of Nelson House and the Nelson House Northern Affairs Community feeling the greatest effects. MH/NCN submitted that measures have been identified to mitigate adverse effects on the culture of NCN members and other Aboriginal people living primarily at Nelson House. This includes the establishment of a community-based NCN Culture and Heritage Resource Management Committee to address cultural changes. MH/NCN predicted that because the Transmission Project would have limited effects on land and resource uses and heritage resources and, because TSK had been incorporated into the planning, it would not have any effects on culture.

The Commission heard considerable discussion on the issues of employment and training during the public hearing. The Participants expressed concern about the benefits of the Projects to Aboriginal people and northern Manitobans. Lacking confidence that the Projects would benefit First Nations other than NCN, they wanted guaranteed employment. While many of the Presenters expressed optimism about the employment and training opportunities that the Projects

would provide, several Presenters expressed concerns based on their experiences with previous hydroelectric projects in northern Manitoba.

The Commission also heard from people who thought the Projects provided a unique economic opportunity. Various organizations spoke of the economic benefit the projects would provide to the North and to Manitoba as a whole.

Commission comments and observations on anticipated impacts

The Commission recognizes that the proposed low-head design, small flooded area and modified run-of-the-river operation of the Generation Project, routing for the Transmission Project, the use TSK, and the partnership arrangement between MH and NCN all serve to reduce the overall environmental effect of the Projects. Mitigation measures and follow-up actions proposed by MH/NCN will serve to address predicted environmental effects, manage residual effects, and identify unforeseen effects of the Projects. The use of environmental protection plans to implement mitigation, follow-up and other requirements such as licence terms and conditions are important elements of environmental protection. Requirements to report on the plans will also hold MH/NCN accountable and improve the effectiveness of environmental assessments of future hydroelectric generation and transmission projects.

The Commission's Generation Project licensing recommendation outlines the hydrological regime that it expects MH/NCN to adhere to so as to ensure that impacts are in keeping with those predicted in the EIS. Its licensing recommendations also call for a monitoring and mitigation regime that makes specific provision for erosion, suspended solids, greenhouse-gas emissions, woodland caribou, fish productivity, and protected areas.

The Commission accepts MH's assertion that the Projects will reduce greenhouse-gas emissions by displacing electricity produced by natural-gas and coal-fired plants in the U.S. However, the Commission believes that MH should attempt to track and report on predicted greenhouse-gas reductions in jurisdictions to which it exports electricity.

The Commission is concerned that Aboriginal people, including NCN members, will be unable to secure the experience prior to the construction that will allow them to secure skilled trades positions. MH/NCN should ensure that there is a bridging program to assist NCN members and other Aboriginal people in receiving

the required training.

The Commission accepts that the direct effects of the Projects on culture are adequately reflected for the Nelson House RMA. However, it is concerned that limited attention appears to have been paid to potential indirect affects that extend beyond the Nelson House RMA and may exist over a longer time frame. The Commission believes that indirect effects of the Projects may be viewed to be adverse, particularly outside the Nelson House RMA. This may be the case for South Indian Lake, where community members said their concerns were not addressed in a manner similar to those of Nelson House.

The Commission expected that given the service life of transmission lines of 50 years and 35 years for transmission stations, that MH/NCN should have developed and presented a decommissioning plan. Accordingly, the Commission will be recommending that *The Environment Act* licence for the Transmission Project require the preparation of a decommissioning plan that addresses technical and environmental considerations.

The weight of the past: CRD, LWR, and the AFP

The Commission heard repeated expressions of dissatisfaction, anger and mistrust from First Nations, other Aboriginal communities and the public throughout the hearing about the continuing adverse effects of the CRD, LWR, the AFP, the outstanding compensation claims for damages, and the ongoing hardships imposed on many of the Aboriginal people in northern Manitoba. The Commission notes that the Wuskwatim Projects would not have been possible without the massive diversion of water associated with the CRD/AFP. The Commission also notes that the CRD and LWR have been operating for nearly three decades with interim licences.

The Commission believes it would not be appropriate to ignore the issues related to the CRD, LWR, and the AFP that were raised at the hearing and continue to dominate the lives of many northerners. MH should meet on a regular basis with First Nations, other Aboriginal communities and affected parties with regard to the operation of CRD, the Missi Falls Control Structure, LWR and the forecast levels of Southern Indian Lake. Furthermore, it should resolve all outstanding issues with regard to the CRD, AFP and LWR and then apply for final licences for these operations.

The Projects and other future developments provide an opportunity to address the effects of past projects and provide for sustainable hydroelectric developments along the Burntwood and Nelson rivers that benefit First Nations, other Aboriginal communities and northern Manitoba residents. Furthermore, there are opportunities to protect and preserve cultural values and achieve long-term sustainable development through partnership agreements such as those being pursued by MH/NCN for Wuskwatim and MH and other First Nations for future hydroelectric projects.

Improving the Process

The EIS documents submitted for these projects were the first environmental assessments completed on a major hydroelectric development under *The Environment Act*. Accordingly, the Commission believes that there are opportunities for improvement by both Manitoba Conservation in terms of regulatory requirements and guidance, and MH in terms of approach, methodology and best practices. This is of particular importance in view of the large-scale hydroelectric developments involving potential partnership arrangements with First Nations currently being planned for northern Manitoba.

Requiring higher standards of performance would enhance the practice of environmental assessment in Manitoba and make it more transparent. In this regard, Manitoba should enact environmental assessment legislation, enhance awareness and provide guidance for proponents, consultants and practitioners, and establish protocols for best professional practice that include use of traditional and local knowledge, selection of appropriate VECs, establishment of baseline conditions, and evaluation of significance in the conduct of environmental assessments. The protocols should reduce uncertainty, enhance effectiveness and improve predictability of future environmental assessments. For these reasons, the Commission has set out a series of recommendations for improvement in the assessment process for future projects.

Recommendations

In its report on the Wuskwatim Projects, the Commission made the following recommendations. The numbers refer to the chapters in which the recommendations were made.

Recommendation 6.1

The Clean Environment Commission recommends that:

Any future Manitoba Hydro "Need for and Alternatives To" filings for major hydroelectric projects be required to include an analysis of all risks, including business risks, and, where possible, the risks should be quantified.

Recommendation 6.2

The Clean Environment Commission recommends that:

The Government of Manitoba grant the Public Utilities Board jurisdiction to review, on an ongoing basis, as part of Manitoba Hydro's future General Rate Applications, the actual revenues and costs of the Projects relative to forecast, along with the impact of the Projects on Manitoba Hydro's financial stability and its domestic rates.

Recommendation 6.3

The Clean Environment Commission recommends that:

Any future Manitoba Hydro "Need for and Alternatives To" filings for major hydroelectric development projects be required to include internal-rate-of-return-analyses of the project that have been conducted from both a Project perspective and Manitoba Hydro's corporate perspective.

Recommendation 6.4

The Clean Environment Commission recommends that:

Any future Manitoba Hydro "Need for and Alternatives To" filings for major

hydroelectric development projects be required to employ a portfolio approach for assessing resource options. The portfolios should include consideration of hydroelectric sequencing as well as coordinated implementation of other initiatives such as DSM programs and SSE projects.

Recommendation 6.5

The Clean Environment Commission recommends that:

Manitoba Hydro should be required to review its non-utility generation policy and its rate structure to ensure that all possible steps are being taken to promote economic non-utility generation.

Recommendation 7.1

The Clean Environment Commission recommends that:

A licence under *The Environment Act* for the Generation Project be granted, subject to the following terms and conditions, which are to be included in the Project licence:

A. Hydrological Requirements

Construction and operation of the Generation Project be subject to the following:

- A nominal forebay water level elevation of 234.0 m asl.
- Maximum permissible daily flow change through the generation station of 330 m^3/s under normal operation and 440 m^3/s under temporarily modified operation.
- Maximum daily drawdown of the immediate forebay under normal operating conditions of 0.13 m.
- Maximum daily drawdown of Wuskwatim Lake under normal operations of 0.08 m.
- Operation in accordance with all existing licenses and agreements for the Churchill Burntwood waterway system and Lake Winnipeg Regulation (LWR).
- Minimum forebay water level under abnormal or emergency operation of 233.0 m asl.
- Immediate notification of the regulator of any operation under emergency mode and the resulting flow changes, and the magnitude of upstream and downstream water-level fluctuations.
- Frequent reporting to the regulator of information relating to pertinent generation station operations including, but not limited to, flows through the station, water

spilled, forebay water levels, emergency operation, upstream and downstream water-level fluctuations, and any deviation in operation and water-level fluctuations from that predicted in the licensing applications for the Projects. This information should be readily and easily available to the public.

- Regular reporting of pertinent information with respect to the operation of the Churchill River Diversion (CRD) and LWR and any effect resulting from station operations. This should include a comparison to effects predicted in the licensing applications for the Projects. This information should be readily and easily available to the public.

B. Environmental Protection Plan requirements

The Generation Station, Construction Camp, and Access Road environmental protection plans (EPP) proposed by Manitoba Hydro and Nisichawayasihk Cree Nation for the Generation Project be incorporated in the licence.

1. The licence stipulate that the EPP require mitigation, monitoring, and reporting on environmental effects, during construction and operation of the Project, on valued environmental components (VECs) and other indicators of change using Traditional Scientific Knowledge (TSK) and Western Scientific Knowledge (WSK) to:

- document evolving baseline conditions and provide reference information for future hydroelectric developments
- predict whether established thresholds will be exceeded and take action to prevent exceedences
- determine thresholds for VECs, where such thresholds are not already established
- assess the accuracy of the assessments with respect to environmental effect identification and measurement
- evaluate the effectiveness of mitigation measures for the assessment of future hydroelectric developments
- measure residual environmental effects and cumulative environmental effects and confirm the determinations of insignificant project and cumulative effects
- verify predictions in the Environmental Impact Statement (EIS) documents and re-evaluate significance if predictions cannot be verified
- provide periodic reports on the effects of the Projects on enduring features, biodiversity, ecological integrity and sustainability.

2. Specific mitigation, monitoring, and reporting should focus on:

- the rate of shoreline erosion of Wuskwatim Lake on an ongoing basis until rates of erosion return to pre-CRD rates
- concentration and downstream extent of sediment transport after completion of construction of the Project until total sediments approach pre-CRD levels
- riverbank erosion downstream from Wuskwatim Lake along the Burntwood River during construction and for a reasonable period of time after. Additional mitigation should be implemented as necessary to control the rate of erosion
- concentration and downstream extent of TSS in the Burntwood and lower Nelson rivers on a regular basis so that up-to-date baseline reference data are available at the time of commencement of construction of the Generation Project
- sediment transport on a regular basis during the construction period to determine the effects on water quality and the extent of downstream movement of these sediments. Monitoring should be more frequent during cofferdam construction and removal.
- woodland caribou population, distribution and behaviour during construction and operation
- fish production in Wuskwatim Lake and the region to verify the prediction that the Generation Project will result in an increase in fish production. The investigation should monitor fish harvests in Wuskwatim Lake in connection with that investigation.
- integrity of protected areas during construction and operation
- greenhouse-gas emissions and their effects during construction and operation.

3. The EPPs should incorporate:

- sustainability indicators for biophysical, socio-economic and cultural conditions
- an adaptive approach to environmental monitoring
- the principles and guidelines of sustainable development, taking into consideration the holistic view of sustainable development.

4. Manitoba Hydro and Nisichawayasihk Cree Nation should be required to:

- report on the implementation of environmental protection plans annually, and to ensure that such reports are readily and easily accessible to stakeholders and to

the general public.

- document the application of TSK during construction and operation of the Project.

5. Manitoba Hydro and Nisichawayasihk Cree Nation should also be required to implement the following monitoring programs that it has proposed to federal regulators:

- Fish Habitat Compensation Plan monitoring program
- Aquatic Effects Monitoring Program
- Sediment Management Plan monitoring program.

C. Employment/Training requirements

The licence should require Manitoba Hydro and Nisichawayasihk Cree Nation to:

- monitor and report annually on First Nations, other Aboriginal people and northern Manitoba hiring for the Generation Project to Manitoba Advanced Education and Training. The results should also be published in Manitoba Hydro's annual report. The reports should also include results of the effectiveness of the training, life-skills and on-site counselling programs.
- include Manitoba Hydro's employment and training terms and conditions in contract specifications and operational procedures for the Generation Project. The contracts and procedures should be audited by Manitoba Advanced Education and Training and the results should be readily available to the public.

Recommendation 7.2

The Clean Environment Commission recommends that:

A licence under *The Environment Act* for the Transmission Project be granted, subject to the following conditions, which are to be included in the licence:

A. Environmental Protection Plan requirements

The Wuskwatim to Birchtree transmission line, the Wuskwatim to Herblet Lake Station transmission line, and the Herblet Lake Station to Rall's Island Station transmission line environmental protection plans (EPP) proposed by Manitoba Hydro and Nisichawayasihk Cree Nation for the Transmission Project be incorporated in the licence.

1. The licence stipulate that the EPP require mitigation, monitoring, and reporting

on environmental effects, during construction and operation of the Project, on valued environmental components (VECs) and other indicators of change using Traditional Scientific Knowledge (TSK) and Western Scientific Knowledge (WSK) to:

- document evolving baseline conditions and provide reference information for future hydroelectric developments
- predict whether established thresholds will be exceeded and take action to prevent exceedences,
- determine thresholds for VECs, where such thresholds are not already established
- assess the accuracy of the assessments with respect to environmental effect identification and measurement
- evaluate the effectiveness of mitigation measures for the assessment of future hydroelectric developments
- measure residual environmental effects and cumulative environmental effects and confirm the determinations of insignificant project and cumulative effects
- verify predictions in the Environmental Impact Statement (EIS) documents and re-evaluate significance if predictions cannot be verified
- provide periodic reports on the effects of the Projects on enduring features, biodiversity, ecological integrity and sustainability.

2. Specific mitigation, monitoring, and reporting should focus on:

- woodland caribou population, distribution and behaviour during construction and operation
- integrity of protected areas during construction and operation
- greenhouse-gas emissions and their effects during construction and operation.

3. The EPPs should incorporate:

- sustainability indicators for biophysical, socio-economic and cultural conditions
- an adaptive approach to environmental monitoring
- the principles and guidelines of sustainable development, taking into consideration the holistic view of sustainable development.

4. Manitoba Hydro and Nisichawayasihk Cree Nation should be required to:

- report on the implementation of environmental protection plans annually and to ensure that such reports are readily and easily accessible to stakeholders and to the general public.
- document the application of TSK during construction and operation of the Project.

B. Employment/Training Requirements

The licence should require Manitoba Hydro and Nisichawayasihk Cree Nation to:

- monitor and report annually on First Nations, other Aboriginal people and northern Manitoba hiring for the Transmission Project to Manitoba Advanced Education and Training. The results should also be published in Manitoba Hydro's annual report. The reports should also include results of the effectiveness of the training, life-skills and on-site counselling programs.
- include Manitoba Hydro's employment and training terms and conditions in contract specifications and operational procedures for the Transmission Project. The contracts and procedures should be audited by Manitoba Advanced Education and Training and the results should be readily available to the public.

Recommendation 7.3

The Clean Environment Commission recommends that:

Manitoba Hydro consult with the Manitoba Metis Federation on matters of mutual interest pertaining to the Projects. Progress on these consultations should be included in the public involvement plan for the Projects and reported on by Manitoba Hydro and Manitoba Hydro and Nisichawayasihk Cree Nation along with other aspects of the plan.

Recommendation 7.4

The Clean Environment Commission recommends that:

Manitoba Hydro and Nisichawayasihk Cree Nation and consult with Mosakahiken Cree Nation about their concerns with respect to transmission routes.

Recommendation 7.5

The Clean Environment Commission recommends that:

Manitoba Hydro, Nisichawayasihk Cree Nation and the Community Association of South Indian Lake renew their efforts to resolve the issues that stand between them in regard to the Generation Project and other related matters.

Recommendation 7.6

The Clean Environment Commission recommends that:

The Government of Manitoba require Manitoba Hydro to resolve all outstanding issues with regard to the Churchill River Diversion, the Augmented Flow Program and Lake Winnipeg Regulation. Following resolution of these issues, Manitoba Hydro should apply for the appropriate final licences for these three operations under *The Environment Act* and *The Water Power Act* as soon as possible.

Recommendation 7.7

The Clean Environment Commission recommends that:

The application for the approval of final licences for Churchill River Diversion, Augmented Flow Program and Lake Winnipeg Regulation should include a review of the terms and conditions, an operational review and any required environmental impact assessments. Clear guidelines should be developed with respect to what constitutes conformance to and/or violation of the terms of the licences.

Recommendation 7.8

The Clean Environment Commission recommends that:

The practice of environmental assessment in Manitoba be enhanced by requiring higher standards of performance. In this regard, the Government of Manitoba should

- enact environmental assessment legislation,
- provide guidance for proponents, consultants and practitioners,
- establish protocols for best professional practice that includes cumulative-effects assessment.

The process should include use of traditional scientific knowledge, selection of appropriate Valued Environmental Components (VECs), establishment of baseline conditions, and establishment of thresholds in the conduct of environmental assessments. The protocols should reduce uncertainty, enhance effectiveness and improve predictability of future environmental assessments.

Recommendation 7.9

The Clean Environment Commission recommends that:

Manitoba Hydro develop a climate-change policy consistent with provincial and national climate change policies and guidance, and apply the policy in the assessment of future hydroelectric developments. Preparation of a sustainable-development strategy in accordance with provisions of *The Sustainable Development Act* would be an essential element of such a policy.

Recommendation 7.10

The Clean Environment Commission recommends that:

Future environmental impact statement submissions for large-scale hydroelectric developments should directly address the Government of Manitoba's *Sustainable Development Code* and its *Financial Management Guidelines*. The submissions should also develop appropriate sustainability indicators for use in identifying and assessing environmental effects, and conducting environmental monitoring.